

NARRATIVE REPORT

STILLATER WILDLIFE MANAGEMENT AREA

JANUARY - APRIL
1952

PERSONNEL

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I GENERAL

A. Weather Conditions

Local weather conditions are of far less concern this spring, except as they affect construction activities, than the weather high in the Sierra Nevadas. With the snow pack in the mountains as deep and as wet as it is, any prolonged thaw or rainstorm could result in heavy runoff that would create flood conditions here in the valley. Damage to marsh installations would result and delays in construction schedules would be inevitable. To date the runoff has followed a normal pattern. Actually, the critical period is yet to come. The deep snow at higher elevations does not melt until May and June.

A summary of the weather conditions which prevailed during the period is as follows:

<u>Month</u>	<u>Precip.</u>	<u>Miles of Wind</u>	<u>Max. Temp.</u>	<u>Min. Temp.</u>	<u>Mean</u>	<u>Evap.</u>
January	1.00	2181.2	59	7	33.0	.959
February	.12	1944.8	64	13	37.4	1.725
March	.72	3219.7	69	12	38.7	2.615
April	<u>.87</u>	<u>1867.0</u>	<u>79</u>	<u>24</u>	<u>51.4</u>	<u>4.641</u>
Totals	2.71	9212.7	79	7	40.1	9.940
40 Year Average	2.19	10,603.7	81.2	-4.8	39.4	14.129

B. Water Conditions

Water in the Stillwater Marsh reached the highest level last winter that it has attained since the inception of the Refuge and Management Area and probably for a good many years prior to that time. With the advent of warm weather the water level has dropped to some extent, but is still way above normal and will undoubtedly remain that way throughout the summer.

At the present time we are receiving an unprecedented flow into Stillwater Point Reservoir. In addition to return flow from irrigation, the District is releasing surplus water into the "L" Line and Diagonal Drains. Outflow from the Reservoir is now 170 cfs which represents the greatest volume of water to come through the outlet since the construction of the Reservoir in 1945.

As an illustration of our increase in water supply, we are listing below the monthly totals in acre feet of water discharged

from the Reservoir together with percentage figures indicating the calculated increase above normal (Bureau of Reclamation figures for the period 1947-1950 are considered normal).

January	3,439 AF - 237% above normal
February	3,527 AF - 337% above normal
March	3,407 AF - 312% above normal
April	<u>8,355</u> AF - 415% above normal
Total	18,728 AF - 334% above normal

There has been only one other month in the history of the Reservoir when it was necessary to discharge more than 8,000 AF of water. The normal peak of discharge occurs in July and the average outflow for that month is only 6,000 AF.

Because of the heavy snow pack in the mountains, dumping of surplus water from Lahontan Reservoir is expected to continue well into July. Marsh inflow will be correspondingly heavy during this period.

Snow survey figures indicate the following prospects for runoff:

1. Moisture content of snow at low elevations (below 7,000 ft.), 2-1/2 to 3 times normal.
2. Moisture content of snow at high elevations, twice normal.
3. Total runoff expected to enter Lahontan Reservoir via the Carson River is 500,000 AF. This is 263% above normal.

Normally a large part of the Truckee River flow enters Lahontan Reservoir by way of the Truckee Canal. During the present high water period, however, the Truckee flow is being dumped into Pyramid Lake except for about 300 cfs required to run the power plant at Lahontan.

In preparation for the expected heavy runoff, the Irrigation District cleaned and straightened much of the Carson River channel below Lahontan Reservoir. This was done during the period from January 19 to February 15. Immediately following the improvement work, spillage from the Reservoir was started. Since that time water has been dumped at the rate of 1400 cfs into the River from which it flows into the Carson Sink.

Starting March 27, the District began dumping additional water through the system of drains. This has amounted to only 300 cfs but it has added greatly to our water management problems, for we are receiving more than one-third of the total.

Of most serious concern is the water accumulating in the Carson Sink. It is estimated that 140,000 acres of the Sink is now under water. Any extended period of strong, westerly winds, or any increase in the amount of water being dumped will back this water into the marsh. This will add to our construction problems, and it will also add to our difficulties in disposing of surplus marsh water.

Following the April 1st snow survey we were advised that there was no prospect of a serious flood on the lower Humboldt River. Since then the picture has changed, and the Lovelock farming district has been declared an emergency area. Runoff, largely local in origin, is coming down so fast that reservoir facilities are unable to handle it. A considerable part of these flood waters may be expected to enter the Carson Sink by way of the channel connecting the Sink with the Humboldt Marsh.

C. Fires.

On Monday, April 21, a series of marsh fires were set on the Canvasback Gun Club. These fires were started at approximately 8:00 AM. A light wind was blowing from the north and the fires quickly spread southward through the Gun Club marsh. A slow fire also burned northward against the wind until it entered the Stillwater Management Area on the east side of Lead Lake.

Several of the refuge personnel were working in the general vicinity that day and observed the spread of the fire. Present also, were Nils Nilsson, State PR Coordinator and Fred Wright, State Waterfowl Technician.

The fire entered the Management Area at about 4:00 PM. Fortunately, it was burning slowly against the wind. Early in the night it burned itself out. There is a heavy mat of dead vegetation in the cattail marsh of the Lead Lake and Millen Units which would have produced a serious fire if conditions had been favorable.

Extent of the burn on the Management Area consisted of 110 acres. Of this total, 90 acres was cattail and 20 acres saltgrass.

On April 22 Mr. Marshall and Mr. Nygren observed a man setting additional fires on the Gun Club Marsh. None of these fires reached the Management Area. This man was identified and was contacted later by Mr. Howard Cantrell, Game Management Agent and the Refuge Manager.

The investigation disclosed that a Reno cattleman, with grazing rights on the Gun Club, had hired men to do the burning. Approval had also been granted by the Club members.

The burned portion of the Management Area was inspected on April 23. It appeared from this inspection that there was little if any damage to nesting waterfowl. Geese and mallards were the only species nesting at the time and neither are known to utilize the area burned because of the heavy cattail growth. There was quite possibly some destruction of muskrats. A large number of houses were burned. At this season of the year there are young muskrats in the nest, and those not old enough to escape will smother from the smoke if they are not burned.

II WILDLIFE

A. Migratory Birds

1. Population and Behavior

Until this spring our duck population graph, maintained for 3 years, has shown a remarkable similarity from year to year. In fact, we were at the point of attempting to predict what would happen next. Then came a sudden upset.

Between February 22 and March 6 our duck population jumped from a normal figure of 12,000 to a very abnormal 77,500 birds. The latter figure represents by far the largest number of ducks tabulated since the inception of the project. Previous peaks have all occurred in late October with 42,000 in 1949 and 1951 and 58,000 in 1950. The previous spring peak was 23,000 ducks. The why of the unprecedented build-up remains unknown, although heavy storms immediately to the north may have been a factor.

The accompanying graph shows how our duck population for the period started out normally then jumped to the high in March and gradually declined back to normal at the end of April.

Figure I shows how the predominating duck species changed from census to census. The mallard was our most abundant duck in January and early February; the pintail in late February and early March; the green-winged teal in late March; the shoveller in early and mid-April and finally the nesting cinnamon teal at the end of the period.

As in 1950, ice during January kept duck numbers down, but by the first week of February the ice was practically gone and the spring migration was on. Those ducks that stayed through the period when ponds were frozen were in large part mallards. Most of these used holes in the ice in the Stillwater Point Reservoir as resting areas and fed in grain stubble on surrounding farmland. Holes in the ice in the Indian Lakes and Stillwater Marsh held green-winged teal and shovellers.

Thousands

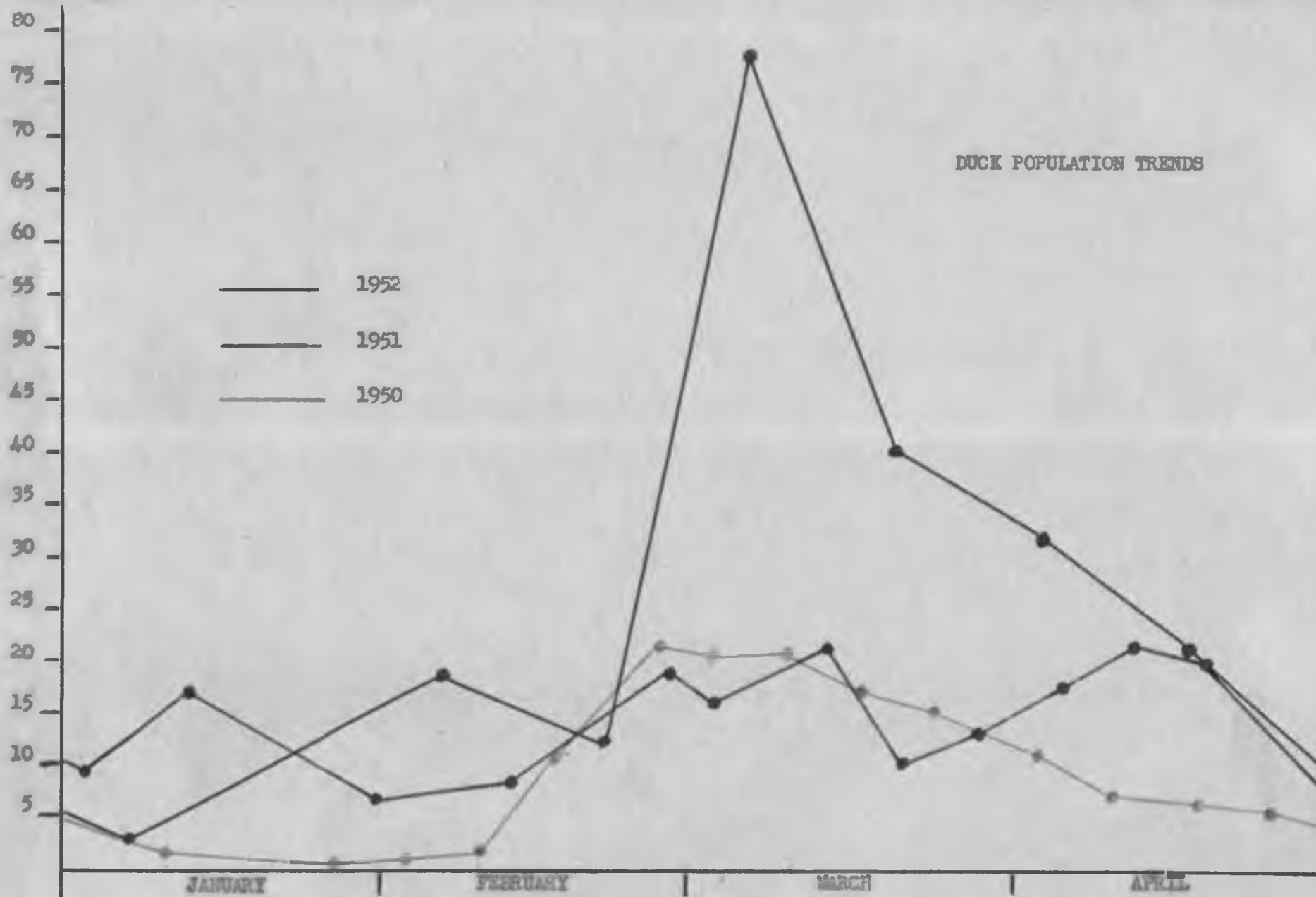


Fig. I. Relative abundance of duck species expressed in percent.
If less than one percent, no figure is shown.

Species	Capture Dates							
	1/7	2/6	2/22	3/6	3/20	4/3	4/17	5/1
Mallard	44%	40%	5%	5%	4%	2%	5%	12%
Cadwall	2		3		2	5	6	17
Baldpate			1		2	1		
Pintail	8	13	40	65	25	7	2	7
G-W Teal	18	27	38	14	38	21	17	6
Cin. Teal						3	6	26
Shoveller	23	12	7	10	19	47	53	4
Redhead			2		1		1	22
Canvasback			1	1	1			
Bufflehead			1					
Ruddy Duck	4	5	1	3	5	12	8	4

Fig. II. Relative duck use of various sections of the Management Area expressed in percentages of total number on Area. Note how little the refuge portion was used.

Date	Total Number	Stillwater N. W. Area		Indian Lakes	Pelican Island
		Refuge	Open Area		
Jan. 7	3,000	35%	41%	24%	0%
Feb. 6	18,500	12	66	4	17
Feb. 22	12,100	7	43	7	43
March 6	77,500	5	87	2	6
March 20	39,800	5	74	8	14
April 3	31,700	6	73	5	15
April 17	21,000	5	79	3	14
May 1	8,300	2	62	3	33

After the freeze the ducks scattered over the entire area. The saltgrass zone around the marsh islands and mainland was flooded and probably received the most use. The flooded areas at Pelican Island also held large numbers of birds.

The relative use of our four areas, the refuge, the open portion of the Stillwater Marsh, Pelican Island Marsh and Indian Lakes is shown in Figure II. A glance at this table shows how the open portion of the Stillwater Marsh held most of the birds, though Pelican Island also made a good showing. As usual the refuge held less than 10% of the ducks except during the freeze when open water there was attractive to mallards. Of significance was the heavy use of the marsh despite the Nutgrass Unit and Big Water being dry.

Only two airplane censuses were made this period. Ground counts were necessary the remainder of the time. For the ground counts we now have a new method for the marsh which gives figures comparable to the old method but is far more accurate. A habitat map of the marsh was made from our old cover map (which was based on aerial photos). The new map shows 20 different habitat types based on vegetation and edge types. The acreage and amount of edge in each sample was computed. On the census we cover a given percentage of the total acreage of each habitat type. The population of each sample is then enlarged in proportion to the actual amount of habitat type present.

High water, which flooded many roads, made access to many census ponds difficult, or impossible. A full day was required to census the Stillwater Marsh adequately. The Pelican Island Marsh and Indian Lakes were covered the following day. We feel this two-day count does not impair accuracy because there seems to be little daily bird movement between Stillwater and Pelican Island. This is in part demonstrated by the species found in these areas this spring. The Stillwater Marsh catered in large part to shovellers and mallards while pintails, baldpates and gadwalls seemed to prefer Pelican Island.

So far no mention has been made of geese, swans and other waterfowl groups. The individual accounts below cover these species.

Whistling Swan. Swan numbers were very low this year, probably because their favorite areas, the Nutgrass Unit and Big Water were dry. Last year we had 2,300 of these birds in January while there were less than 500 at the same time this year. These birds gradually declined in numbers through February and March. In April from two to four stragglers remained. We are beginning to wonder if these aren't going to spend the summer with us.

Canada Goose. Our Canada goose numbers were back up to where they were in 1950 with as many as 2,000 being present in January. As usual, most of these birds were gone by early March and by late March all that remained were a few non-breeders and our breeding population. The latter population does not appear very encouraging. The two-fold increase in our breeding honker population, noted during each of the last two years, seems to have come to a sudden stop. Surveys indicate this year's breeding

population is no larger than last year's, which would mean fewer than 30 pairs. At the close of the period no broods had yet been seen. One goose nest was found on April 22 and two on April 24. Four eggs were present in each.

Lesser Snow Goose. Like last year, the spring snow goose migration on the area amounted to practically nothing, although two years ago up to 3,000 were recorded in March. The largest number seen this spring was 160 which flew over but did not stop. Again we have a straggler from the migrating flocks. One was seen twice in April.

Mallards. The mallard congregation on the Stillwater Point Reservoir, during the early part of the period, has already been mentioned. Our mallard peak went to 7,300 this year, or a little more than 2,000 above that of last year. A few began to nest at the end of the period. A nest with eight eggs was found on April 24.

Gadwall. Gadwall numbers gradually built up from 50 in January to 1400 on May 1.

Baldpate. This species did not appear in January. The greatest number seen was 950 on March 20.

Pintail. The January 7 census showed but 200 pintails. By February 22, 5,000 were present and by March 6, a peak of 50,500 were noted. In 1951 a peak of 7,700 pintails came on March 14, and, in 1950, a peak of 17,500 was noted on February 27. Thus, our pintail numbers were far above normal this year. Only a few pintails nest here so, as usual, the end of the period showed less than 1,000.

Green-winged Teal. Numbers ran from 500 in January to 15,000 on March 20 and 21 and then back down to 500 at the end of the period. This peak occurred at the same time as 10,900 were recorded on March 19 of 1951.

Cinnamon Teal. As in 1950 and 1951, these birds did not appear until mid-February after which each census revealed a few more. It looks like this is going to be a big year for our number two nester, as 2000 were present at the end of the period compared to 400 the previous year at this time.

Shoveller. This, the third spring we have records, shows another jump in shoveller numbers. A peak of 14,800 shovellers appeared on April 3. The peak for 1951 was 10,800 on March 12, while in 1950, the peak was 900.

Redhead. Our number one nester, the redhead, as usual remained inconspicuous until the end of the period. Pronounced migration of these birds did not begin until the first of May.

Canvasback. The spring canvasback migration ran like 1950 and 1951 with 700 being recorded on March 6. This is the same as last year's peak. Over 100 were still present by April 17, after which no more were seen.

Scaup. As usual, the scaup didn't make much of a show, the largest number seen being 115 on March 21.

American Golden-eye. Fifteen of this species on February 7 were the most recorded.

Bufflehead. More buffleheads were noted this spring than at any previous time. They frequented flooded greasewood and alkali weed areas as well as the Indian Lakes. Their numbers peaked on March 6 and 7 with an estimated 225. Up to 100 were seen in 1951.

Ruddy Duck. During previous years up to 3,000 of these birds concentrated on the Big Water in mid-March. With the Big Water dry this year, they appeared in flocks in the same type areas as frequented by the buffleheads, and in surprisingly large numbers. A peak of 4,000 was reached on April 3 and 4.

American Merganser. Mergansers came and went like last year and in about the same numbers. On January 7, 100 were recorded. By February 8 and 22, 600 were present after which numbers tapered off to fewer than 50 by March 21.

Coot. The coot is one bird we can always count on for a good showing. Like last year, we had but 300 in January. By the end of February 2,700 were present and on April 3 and 17 over 17,000 were recorded. Our peak last year was 20,000 on April 12. By May 1 the coot population had dropped to 6,500.

Grebes. What was said a year ago on grebes could be repeated again. Stillwater has three species of grebes, the eared, Western and pied-billed. The first eared grebes of the year were seen on April 18. Western grebes didn't show up in numbers until the first of April. Pied-billed grebes began calling at about the same time.

Pelicans and Cormorants. No birds of this group remained with us through January and February like last year. The first migrant pelicans were seen on March 5, after which they appeared in ever-increasing numbers. Cormorants weren't seen until the 20th of March.

Hérons, Egrets and Ibis. Some of these birds were nesting at the end of the period, but no real check of our three nesting colonies has been made as of this time. Those blue herons that previously nested on the nearby Freeman Ranch moved to cottonwoods at the southwest corner of the Canvasback Gun Club. Great blue

herons stay with us through the winter as do the American egrets. The latter bird was seen only twice, however. The first night heron of the year was seen on February 7, two days later than last year. The first white-faced glossy ibis of the year was represented by one bird on April 17. Snowy egrets were first seen on April 3.

Shorebirds. The shorebird migration for this year does not seem as conspicuous as that of last year because of the absence of water in the Big Water. However, a few black-bellied plovers, willets, greater yellow-legs and marbled godwits and large flocks of dowitchers and peeps have been passing through. The breeding snowy plovers, killdeers, avocets, stilts and phalaropes also appeared during the period. Like last year, a big concentration of avocets appeared on mud flats at Pelican Island in April. Avocet nests with three eggs each were found as early as April 18 at Pelican Island. Pelican Island constituted our best shorebird habitat.

Gulls and Terns. Ring-billed gulls were present during the first of the period, but by the time California gulls appear the forepart of April, they have all but gone. On April 23 the gull and tern nesting island in the Stillwater Point Reservoir was checked. A total of 56 California gull nests, most of which contained eggs, were counted. The Caspian terns had not yet begun to nest. This latter species did not appear in substantial numbers until mid-April. Forster's terns first showed up on April 21, but as yet no black terns have been seen.

2. Food and Cover

Just how much food our birds had is a hard question to answer. As mentioned in our last narrative report, sago pondweed did not do as well last summer as previously. Since this is our main duck food plant, we can say there is less food though not necessarily a scarcity of food. The absence of water in the Nutgrass Unit kept them away from most of our alkali bulrush, our number two food plant. However, the high water elsewhere kept the saltgrass zone flooded, and this is where ducks concentrated. The numbers of ducks which utilized the flooded alkali weed and greasewood areas indicated food conditions were also good there, though we don't know what specific items were being taken. This latter statement also applies to Pelican Island.

3. Botulism - None

4. Lead Poisoning - None observed.

B. Upland Game Birds

Upland game bird use of the Area is almost entirely associated with adjoining private land, the only exception being a covey of quail seen near Big Indian Lake.

C. Big Game Animals

A dead pregnant female mule deer was found floating in the water on Foxtail Lake on February 28. The deer had apparently drowned. No evidence of serious disease or wounds could be found on the carcass, which was comparatively fresh. It was apparent from the location and condition of the body that the deer had become entangled in cattail growth while attempting to swim the lake and was unable to escape.

D. Fur Animals, Predators, Rodents and Other Mammals

1. Fur Animals

Our thriving muskrat population survived the winter with no noticeable loss other than trapping. When water levels rose, there was a movement to shallow water areas, such as Pintail Bay. However, the high water did not reach such heights that it flooded out any houses.

2. Predators

Little was seen of the coyote, our only predator under this category. Poison bait is keeping their numbers at a bare minimum. 1080 stations placed at the base of the Stillwater Mountains take care of those coyotes that ordinarily drift onto the Management Area.

E. Predaceous Birds

There is nothing new to add here, as predaceous birds continued to remain inconspicuous. During part of the period a small flock of ravens moved in along the Pintail Bay Dike, but they later moved on. The trees along the Carson River harbored the usual small number of magpies and bald eagles. Only one prairie falcon and one golden eagle were seen.

F. Fish

All matters pertaining to fish are discussed under fishing success.

III DEVELOPMENT AND MAINTENANCE

A. Physical Development

Ever since we have been in this country we have heard stories of the old-time winters when rain, snow and mud kept the farmers out of their fields from October to spring. This winter has not been quite that bad, but it has been wet enough to make working conditions difficult. Development in the pasture program has progressed satisfactorily but marsh work has been hampered. We contended with mud, boggy roads and stuck equipment until the latter part of March when spring winds began to absorb the excess moisture.

Present status of the various construction projects is summarized below under the appropriate job headings.

Nutgrass Dike. Work on this dike was discontinued on January 28. Backwater from the Carson Sink flooded the dike line making work so difficult that it was deemed advisable to postpone the job. The possibility of more water from spring floods also entered into the decision to move the Lima dragline to higher ground.

During the period that the Lima worked on this dike, it threw up fill for 3,100 feet, approximately 25% of the total dike length. This fill includes a little more than half of the total width of the dike. When construction was started the plans called for a dike with 5 to 1 slopes. With this degree of slope, the average width of the dike at its base would be 61 feet. This width, plus the 10 feet of berm, is too great for the fill to be completed with one cast. We had, therefore, started on the north side of the dike line with the intention of casting the north half of the dike for its full length then returning on the south side to complete the fill. Since then the specifications have been changed and a 2 to 1 slope will be used. With this reduction in slope we should be able to move the entire fill in one operation.

There is little likelihood that work will be resumed on the Nutgrass Dike before the first of July. Spring floods have not as yet materialized, but it is still too early to foresee what water conditions in the marsh will be. Heavy runoff from melting snow in the mountains did not start until the last week of April.

Lead Lake Canal. This canal is a major earth moving project. From the headgate in the Lead Lake Unit to its outlet in the marsh of the Nutgrass Unit, it is 18,100 feet in length. To this must be added 900 feet of excavation necessary to tie in with a deep channel on the Lead Lake end. Construction has involved dragline work on mats across portions that are under water and, at the other extreme, excavation to a depth of 11.4 feet where the canal bisects a ridge.

Present status of the excavation work is as follows:

10,525 lineal feet excavated or 55% of total
45,200 cubic yards excavated or 57% of total

The crew of the Lorain dragline is now working a 48 hour week in order to be able to complete the excavation this fiscal year.

Intracross Road. This road is being built along the east side of the State Shooting Area. It extends between the Division Road and the east end of the Nutgrass Dike. The south end of the road, approximately 1.5 miles in length, has been completed and gravelled. The north end, 20,000 feet in length, is now under construction. This work is being done with the 48" elevating grader. The road follows a clay ridge parallel to the marsh. There are, however, low spots which have to be filled in, and the roadbed is being elevated approximately 18 inches even on higher ground. The grader is now well along on construction of the first 2.6 miles. Fill has been added in low spots totalling 5,200 lineal feet, and work is now underway elevating the roadbed between the areas of fill.

East Waterford Road Plot. Except for 4 weeks spent building fence, the concrete crew has worked in the East WF Plot for the entire period. Three concrete lateral checks have been poured in Lateral 366. Seven of the 11 concrete culvert outlets have also been installed in this lateral. All structures in Lateral 351 were riprapped in preparation for irrigation from this lateral.

Excavation of Lateral 366 is complete. Additional dirt is needed for the bank of this lateral, however, and HD-14, 995, has spent some time dozing in the required fill.

Planting of the pasture has followed closely behind the construction work. New seeding of sweet clover and grain has been made on 115 acres. The grains used are barley, rye and oats. It occurred to us that oats might be grown more successfully than barley or rye because of the high water table in the pasture, so 10 bushels were planted on a trial basis. There is some question as to the alkali tolerance of oats.

In addition to the new seeding, 71 acres, previously planted to clover and grain, were planted to grass and clover mix. This seeding consisted of:

orchard grass	white Dutch clover
smooth brome	alfalfa
perennial rye grass	strawberry clover

Upon the recommendation of the Soil Conservation Service, we made experimental plantings of 2 additional grasses, alta fescue and tall wheat grass. The alta fescue was recommended because we have had excellent success with rye grass. This fescue grows under the same type of conditions as rye grass and is considered a better pasture plant. The tall wheat grass was tried because of its high alkali tolerance. It is the only domestic grass able to survive in soils with a high concentration of black alkali.

Fence. The north unit of the Paiute Waterfowl Food Plot was fenced during the period. This fence encloses the 100-acre section of pasture under development. The fence is 3.16 miles in length. It consists of 4 strands of barbed wire strung on juniper posts set 18 feet apart. The fence makes 2 canal crossings and has 3 gates at road crossings. Two of the gates are on a canal bank road. Their construction involved the placing of additional fill in order to provide a footing for brace posts.

Dike Repair. During January and February "D" Dike was rebuilt and riprapped with rock. Wave action against the upstream side of the dike had cut away about half the fill. Our fleet of 3 dump trucks was increased by two additional trucks borrowed from Tule Lake. These were put into operation hauling riprap from our rock pit in the foothills of the Stillwater Range. At the same time the Lorain dragline cast new fill against the downstream side to widen the dike.

A total of 652 yards of rock was needed to riprap the face of the 1100 feet of dike exposed to severe erosion. This particular dike section has been one of our worst trouble spots. It is directly in line with the prevailing westerly winds, and there is no marsh growth to impede the force of current and waves. On days of extremely heavy wind, water from breaking waves may be thrown completely across the dike.

Miscellaneous. As time permits we continue to work on various miscellaneous projects designed to improve our equipment operation and shop facilities. The biggest job undertaken during the period was the construction of a front end loader for the R-5 Caterpillar Tractor. The loader is not only a piece of equipment badly needed, it also enables us to get the most efficient use from the R-5 tractor. This tractor is not adapted to marsh use because of the extreme narrowness of its tracks. The least likely place for it to get stuck is in the rock pit.

Except for labor and welding materials the loader attachment cost very little. It was built largely from steel obtained from surplus at no charge except for transportation and from odds and ends in the shop.

One of our biggest jobs is loading and hauling rock and gravel. In the past we have had to either pull the P&H dragline

off of other jobs for the loading or attempt to make out with the small scoop on the Farmall Tractor. The new loader, which has a capacity of $3/8$ yard is doing an excellent job.

Other work during the period included enlarging the concrete wash slab in the northeast corner of the Stillwater yard and painting the masonite interior of the shop with aluminum paint.

Equipment. Items of new equipment received during the period are a portable Kerrick steam cleaner with a capacity of 90 gallons per hour and one 3-ton Dodge Dump truck. The Biologist is now equipped with a new Willys 4-WD station wagon received during the period. Also new, but home made, is a boat trailer constructed by the shop crew.

Equipment Repair. After a delay of some months due to slow delivery of parts, the motor overhaul was completed for the motor patrol and this piece of equipment was again put back in operation.

Tractor HD-14, 1042, was in the shop for 2 weeks undergoing repairs to the track rollers and final drives.

The LaRoi engine on the Gilson, 1 sack, cement mixer was overhauled.

The Lima dragline will be down for an indefinite period awaiting final decision as to the advisability of making a major overhaul. The cost for parts alone, as estimated by the manufacturer, will be \$10,000, while complete delivery of parts will require about one year.

B. Plantings

1. Aquatic and Marsh Plants

Plantings of Olney's bulrush (Scirpus olneyi), hardstem bulrush (Scirpus acutus) and burro-weed (Allenrolfea occidentalis) have been made this spring. The olneyi was transplanted to the edges of Swan Lake and Pintail Bay dikes from the former nursery plot in the East Pasture. Fifty-one clumps were transplanted in all, with Fred Wright, State Waterfowl Technician, cooperating. Mr. Wright also took part in the digging and transplanting of 275 clumps of hardstem bulrush. These were dug with a slip scraper pulled by the 22 Cat. The material was planted by means of a boat in sites in Pintail Bay, Pool 3889 and Fortail Lake. Six to 8 clumps at a time were planted at quarter-mile intervals in these lakes where the absence of edge now prevents any use by nesting waterfowl. The burro-weed planting was an experimental one, the success of which remains to be seen. One hundred plants were placed

at 40-foot intervals along the edge of Pintail Bay Diike for nesting cover. Other than saltgrass, this is the only plant known to us that will grow in the strongly alkaline soil of the dikes above water level.

With the exception of the Scirpus olneyi it is too early to say anything concerning the results of the transplantings. The olneyi has been both a success and a failure. There were 3 reasons for introducing olneyi. The plant is a good source of muskrat food. As it will grow above water line it will also serve for dike protection and as waterfowl nesting cover. The plantings were successful in fulfilling the first requirement. Muskrats have dug out and consumed the rhizomes from practically every clump. In all other respects the plantings must be considered a failure.

2. Trees and Shrubs

On March 18, a row of trees was planted along the north and west sides of the Stillwater yard. Objectives of the planting were twofold. First, to provide shade and some degree of beauty, second, to provide a windbreak to reduce sandblasting of the shop windows. Carolina poplars were set at wide intervals along the outside of the fence at the front of the yard while several species of smaller growing trees were hedge-planted on the west side. Because of extreme soil alkalinity new dirt was hauled in for the plantings. The end results of this are questionable, however, for the new soil should soon be impregnated with salts through percolation. It is expected that the rate of survival will be low, and it may well be that a considerable period of leaching will be necessary before we have any real success. In an effort to counteract the effects of the alkali, gypsum was mixed into the soil prior to planting.

Tree varieties planted in the hedgerow were:

Chinese elm	golden willow (2 varieties)
cork elm	ailanthus
Russian olive	black locust
Jampasse olive	white poplar
apple (2 varieties)	

The 5 apple trees were a donation from an interested nurseryman. We doubt very seriously that these trees will stand the alkali but felt obligated to plant them after the nursery owner had gone to the trouble of digging them up and delivering them.

Water is being pumped out of the Reservoir outlet for irrigation of the tree plantings.

3. Upland Herbaceous Plants - None

4. Cultivated crops

Plantings in the East Pasture have been discussed in some detail under Section III-A, Physical Development. We might elaborate to some extent on acreages involved.

sweet clover with rye -	9 1/2 acres
sweet clover with oats -	12 acres
sweet clover with barley -	9 acres

The clover and grain plantings were made on new ground. In addition to these new plantings we went back over 71 acres of sweet clover, planted last year, and drilled in the final mixture of grasses and clovers.

C. Collections - None

D. Receipts of Seed and Nursery Stock - None

IV ECONOMIC USE OF REFUGE

A. Grazing

Special Use Permits for cattle grazing have been issued during the period as follows:

<u>Permitter</u>	<u>Acres</u>
Howard E. Austin	900
Daniel Casey	600
Ed R. Casey	525
Michael P. Casey	430
Ray E. Emerson	350
H. M. Erb	125
Clyde Hiibel	200
Samuel R. Hiibel	265
William Manha	300
John Mussi	900
Carl E. Flocher	350
John J. Schmaling	100
Joe Serpa	875
James Sloan	455
Howard Wolf	400

Two permits were issued for grazing horses to:

Tom Brackney	70
Samuel R. Hiibel	55

One Exclusive Use Permit was issued to Ira H. Kent covering a 5 year lease on 20 acres within the Stillwater Refuge adjacent to the Kent ranch.

B. Haying - None

C. Fur Harvest

Tabulated below are the complete muskrat harvest figures for the Stillwater Wildlife Management Area.

<u>Trapper</u>	<u>Permit No.</u>	<u>Marsh Area</u>	<u>Total Catch</u>
Herman Johnson	T-5353	State Shooting Area	2,521
Gene Akina	T-5352	Refuge	60
J. R. Alcorn	T-5354	Refuge	344
Total			2,925

The muskrat pelts were divided on a 50-50 basis with the Government's share being shipped to Seattle Fur Exchange. The Exchange has sold all of the pelts with the exception of 21 badly damaged for which, apparently, there was no demand. Price received is as follows:

<u>Date</u>	<u>Pel. Sold</u>	<u>Net Total</u>	<u>Average</u>
3/13/52	377	\$ 576.06	\$ 1.53
4/10/52	1064	1092.53	1.03

D. Timber Removal - None

E. Other Uses

Special Use Permit STI-17 was issued to Grasteit Fish Co., for removal of carp from refuge waters. The results of this operation is discussed in detail under Section VI-E, Fishing.

V FIELD INVESTIGATION AND RESEARCH

A. Marsh History

Since inception of the project we have been on the lookout for historical information pertaining to the Area. Information on plant composition in the marsh, its extent and its changes, and the wildlife which inhabited it before interference by white man seemed particularly desirable.

Like so much of Nevada, this immediate region remained practically untouched by white man until the 1890's with the exception of the immigrant trails used by the early travelers enroute to California. The Paiute Indians of the Carson Desert and Fallon area, including those on the Stillwater Wildlife Management Area, went on living in their primitive ways. Many resented any of white man's ways and tools, preferring to live in the way of their forefathers. We are fortunate in having several Indians in this vicinity who in their childhood lived under these primitive conditions. Through the efforts of a local archeologist, Mrs. Peggy Wheat, one of these Indians has been gradually revealing her story of life back in the days of the bow and arrow, the stone knife and the buckskin and tule clothing. This story of primitive existence in the deserts and marshes has brought out many biological items of a historical nature. We found that these Indians, who lived off the land, knew plant and animal life more intimately than most white men ever do. To them a knowledge of field biology was a matter of life or death.

To assist in proper identification of plants and animals, Mr. Marshall spent three days with Mrs. Wheat and the Indians. One day was spent indoors going over plant specimens and bird pictures, one at the State museum in Carson City and one in the field on the Stillwater Wildlife Management Area.

Before we go further, let us introduce the two Indians involved. The oldest, Alice Steve, is not particularly anti-white as she played with white children as a girl and her parents worked for a white family. Nevertheless, she had a close association and knowledge of primitive life. She has been willing to talk freely and because of this has encouraged Woozie George, to whom she is related, to do the same. Woozie is very anti-white and takes a crack at us whenever the opportunity affords. Woozie, as a girl, lived in the Stillwater Marsh following the customs of her ancestors. She directed us to where she lived, which turned out to be the same high piece of ground the World War II Navy Cabin stood upon. Woozie has loosened up through many days with Mrs. Wheat. During the course of a day with her, we took a verbal beating. For example, with reference to the coot, which is not hunted to any extent in Nevada, she asked, "Why don't white man let Indian have mud hen drives. White man don't like mud hen. Indian very much like mud hen. Mud hen go to waste." She talked further on the subject of the waste of game by white man, and the subject of the doe shot and left to spoil.

The first session with Alice and Woozie was in conjunction with Mrs. Wheat's desire to obtain the Indian names of plants and birds of this region along with their uses. For this the refuge collection of pressed plants, plant specimens from the field and colored plates of birds were used. The material on the birds was double checked with specimens in the State museum. Plant material

was checked and re-checked with different specimens and in the field. Mrs. Wheat recorded the interviews on a wire recorder (the wire will be turned over to the State museum).

The system used was to show them a specimen, ask if they recognized it; then ask for the Paiute name followed by any information regarding it. They correctly recognized practically every plant specimen put before them. To check their accuracy, we would ask questions regarding the growth habits of the plant, whether it grew in the water, on the bank or in the desert in the sand, etc. The same went for the birds. When Woozie saw a picture of a ruddy duck and volunteered "big egg", there was no doubt that she knew what she was talking about.

We found they knew all the marsh emergents, desert annuals, grasses and shrubs, as well as the plants of the mountain ranges, by individual names. Submergents, however, were simply grouped under one name, "po-'wau-ho-nib." They knew which drake duck went with which female when shown a case full of specimens or a colored picture with many ducks. The same went with other birds. They could tell us when the various species nested, what months migrants arrived and departed, what grebes ate, what plants ducks ate, or anything of that nature.

When Woozie was taken through the Stillwater Marsh she remembered every bit of it despite the many changes that have taken place. It was her first trip over the marsh in a number of years.

There seemed to be no doubt that these Indians were qualified observers.

Between the interviews inside and the trip over the Area we were able to gather the following facts which seem particularly significant to us.

1. Relative abundance of marsh emergents - Cattail is now the most abundant emergent of the Stillwater Marsh, but Woozie says alkali bulrush was number one, hardstem bulrush number two and cattail number three in abundance when she was a little girl. The following is a rough estimate of the marsh then and now, as described by the Indians. These figures include the Canvasback Gun Club, but exclude those water areas not present in 1900.

	<u>About 1900</u>	<u>Now</u>
Hardstem Bulrush	1600 acres	800 acres
Cattail	1300	3800
Alkali Bulrush	<u>1900</u>	<u>1200</u>
Total	4800 acres	5800 acres

2. Extension of alkali bulrush growth towards Big Water - The alkali bulrush growth of the Nutgrass Unit extends about a mile further north than formerly.

3. Absence of some present-day ponds - The pond at the northwest corner of the Stillwater Marsh and some of the northernmost ponds of the Swan Lake Unit did not exist until recent years. On the east side of the Stillwater Marsh, water extended no further south than the present site of "D" Dike. The Big Water was present. We did not get to Pintail Bay to check if it is new.

4. Change in Tule Lake - About 1900 Tule Lake contained no emergent growth. Today it is full of hardstem bulrush clumps.

5. Submergents over entire Stillwater Marsh - All open water contained submergents. Today much of the west side of the Stillwater Marsh is barren.

6. Large muskrat houses new - The native muskrat was apparently not much of a house builder. Upon seeing houses built by our Tule Lake muskrat stock, Woozie and Alice were puzzled and asked, "What are those things out in the water?" The native muskrat they knew lived mostly in bank burrows, but from their description it would appear they put up some houses the size of push-ups. They never saw anything like our present houses. Some of the local sportsmen have also commented on our present "rat" houses as being much larger and more numerous than those made before the introduction of the Tule Lake stock.

7. Relative abundance of various waterfowl species.- The relative abundance of the various wintering and migrant species of ducks was about like the present. The goose situation was quite different according to their description. After seeing both pictures and mounted specimens of the white-fronted goose, they insisted the species was as abundant as the snow goose. Both occurred in huge flocks. Today all we see of the white-fronted goose is a flock of four or five several times each year.

Of even more interest is the status of nesting Canada geese. They report that the Canada goose nested in such abundance in the marsh that the eggs of this bird constituted an important food item in the spring, and that they carried on goose nest hunts. The honkers, they report, nested primarily in alkali bulrush on little platforms. They were hazy on the origin of these platforms. This is in contrast to the small goose nesting population of today which nests on our big "rat" houses.

Of other nesting waterfowl they report that the redhead was probably the most abundant nesting duck but that the cinnamon teal ran a close second. This is the same as today.

8. Heron Rookeries - Only one heron rookery was remembered. From their description of its location, it was probably the present one just west of Structure 16.

9. Origin of Indian Lakes - Big Indian and Papoose Lakes were created in recent times by the Indians. The Carson River was dammed at a point opposite these lakes and part of its waters diverted into a channel which led to these two lakes. The channel was, at least in part, excavated by the Indians. The lakes south of Papoose were not formerly present nor were the seep lakes. Whether water from Big Indian drained into Cottonwood and East Lakes is not known.

10. Absence of submergents in Indian Lakes - No submergent or emergent plant growth was present in Big Indian or Papoose Lakes as is still the case today.

11. Poison in water of Carson River drainage - This last item is a little difficult to believe, but we will put it in for what it is worth. Alice and Woozie's families told them that during one year, just before they were born, all animal life that came into contact with the Carson River water died. This included most of the Paiute Indians and all that were living in the marsh. It included all the ducks and geese. Those Indians that escaped were living in the hills at the time where they gathered pinon pine nuts. They didn't return to the marsh for several years. It was their belief that the waters of the river contained poison from waste material dumped from the Virginia City mines apparently in the 1860's or 1870's. Woozie firmly believes even today that the poisoning was deliberate on the part of the white man as punishment for Indian wars that took place a few years before. Apparently life above the mines was not affected. If this story is true, its effects on the Stillwater Marsh and its birds, particularly if it hit nesting waterfowl, may not be fully overcome even today.

The above constitute the main items discussed. Accounts of the different uses of the plants and birds of the marsh by the Indians are fascinating but do not have any particular bearing on the present discussion.

B. Goose Nesting Stacks

In an attempt to improve goose habitat we built some experimental goose nesting sites the first week in March. These were like overgrown muskrat houses which were built as high as a man's head. They were constructed of cattail or hardstem bulrush which was cut at, or near, the site and piled up with a hay fork. The stacks were checked the last week of April, but had not been used by geese although goose nests were found nearby three of them on natural muskrat houses. Rather than goose nests, one of

the stacks checked on April 24 was found to harbor a mallard nest containing eight eggs. The nest was built in a hollow on one side of the stack, which was about 300 feet from land on a cattail bordered pond.

VI PUBLIC RELATIONS

A. Public Uses

Visitor days of hunting, fishing and miscellaneous use will be tabulated on December 31st as per Mr. Krummes' memo of March 26, 1951.

B. Refuge Visitors

The following visitors were received in Fallon during the report period:

- January 10 - Wilfred N. Anderson, Assistant Regional Refuge
to Supervisor, Portland, Oregon, arrived with the
18 firm intention of staying not more than 3 days.
The storms in the mountain ranges surrounding
the Lahontan Valley suddenly closed in and Mr.
Anderson found himself snow bound although
there was not a bit of snow in Fallon. During
his stay, a thorough audit of the Service
contributions to this project was made by
Mr. Anderson
- January 17 - Howard J. Sargeant, Assistant Regional Refuge
Supervisor, Portland, Oregon, spent the day going
over grazing problems and the grazing conditions
of the Stillwater Wildlife Management Area.
- January 22 - Frank Groves, Director, Nevada State Fish and
Game Commission, spent the afternoon on the
Area taking still and motion pictures.
- January 24 - Thomas C. Horn, Refuge Manager, Tule Lake Refuge,
to spent five days at Fallon attending conferences
29 with the Truckee-Carson Irrigation District and
the Nevada Fish and Game Commission relative
to the work program and the work progress of the
Stillwater Wildlife Management Area.

- January 31 - Harold W. Preston, Assistant Administrative Officer, Portland, Oregon, spent the day in Fallon giving assistance on administrative problems and making an inspection trip to Stillwater.
- February 19 - Miss Winifred G. Baum and Harold J. Regan, Administrative Assistants, Branch of Wildlife Refugees, William E. Ackerknecht, Chief, Section of Land Management, Washington, D. C.; Kenneth F. MacDonald, Regional Refuge Supervisor, Harry D. Willis, Assistant Regional Engineer, Lee R. Jacoby, Civil Engineer, Portland, Oregon; George Barclay, Regional Refuge Supervisor, Region II; Francis C. Gillett, Regional Refuge Supervisor, Region III; spent the day on an inspection trip over the Stillwater Wildlife Management Area.
- February 28 - Refuge Manager Thomas C. Horn, Tule Lake Refuge, spent the day on an inspection of funds and work progress on Stillwater Area.
- March 13 - John Crowl, Range Conservationist, Bureau of Land Management, spent part of the day conferring on halogeton.
- March 18- to April 3 - Ralph E. Vail, Engineer, Regional Office, spent time at Stillwater making a survey of the Harmon Diversion preparatory to making a cost estimate of this proposed construction.
- April 4 - Charles Pusch, Chairman, Mineral County Game Management Board, was in the office relative to acquiring maps of the Area for distribution to interested sportsmen during waterfowl and fishing seasons. Mr. Pusch made very favorable comments regarding benefits the refuge is giving to the sportsmen in their duck hunting south of Stillwater in the Walker Lake area.
- April 11 - D. F. Collins, Soil Conservation Service, accompanied by Refuge Manager Giles spent the morning going over the Area on an inspection of our pasture plantings.
- April 21 - Paul Steel, Biologist, Tule Lake Refuge, spent the day on the Area with David Marshall, Stillwater Biologist, making an inspection trip and getting some pointers on census taking.
- April 29 - Tom Trelease, State Fisheries Technician, stopped in on his way to the Area where a study of the bass was to be made.

C. Refuge Participation

The following meetings were attended through the report period:

- January 26 - Refuge Manager, LeRoy W. Giles, attended a meeting in Reno with State Fish and Game Commission in company of Thomas C. Horn, Refuge Manager, Tule Lake Refuge, and Paul T. Quick, Assistant Regional Director, Portland, Oregon, relative to the total cost of Stillwater Wildlife Management Area.

- January 28 - In company of Frank W. Groves, Director, Nevada Fish and Game Commission and Thomas C. Horn, Refuge Manager, Tule Lake Refuge, Refuge Manager, LeRoy W. Giles, attended a meeting of the Board of Directors of Truckee-Carson Irrigation District relative to pasture development on the Area.

- February 11 - Refuge Manager, LeRoy W. Giles, and Biologist
to David B. Marshall, spent this time attending
15 the Refuge Manager's Conference held in
Portland, Oregon.

- February 27 - Attended a conference with officials of the Nevada State Fish and Game Commission and the Truckee-Carson Irrigation District concerning projects in fiscal year 1953 work program.

- March 12 - Sharon Coats, Girl Scout, took over office duties as part of our participation in the observance of Girl Scouts Birthday.

- March 24 - LeRoy W. Giles, Refuge Manager, attended the meeting of local sportsmen interested in forming a boat club. Attempted to explain lack of boat landings at Stillwater.

- April 7 - The Annual Snow Survey Meeting was held at the office of Truckee-Carson Irrigation District and attended by LeRoy W. Giles, Refuge Manager.

- April 25 - LeRoy W. Giles, Refuge Manager, and David B. Marshall, Biologist, attended meeting of Churchill County Chamber of Commerce, local sportsmen and State Fish and Game Commission officials concerning possibilities for development of Indian Lakes area for fish and upland game.

D. Hunter Success

There was no hunting on the Area during the period.

E. Fishing Success

During this period Stillwater, overnight, became a major fishing area of the State. During the spring of previous years, a few parties each weekend put in at Millen's Landing and fished for catfish and bullheads. Towards fall they switched to large-mouth black bass, with some success. Live bait was usually used. This spring, the usual fishing with live bait began on April 20. Near the end of the first day, a small boy, in one of the boats, began peeling an orange. When the first peeling hit the water a bass took it. The boy's father dug an orange-colored plug out of his tackle box and promptly hooked the bass. From that moment business has been rushing.

Since then it has been a luckless fisherman that has not brought out a few bass and many limits of 10 have been caught. The surprising feature of the fishing is the large size of the bass. The average size is at least 2 pounds (any fish smaller than one pound being returned to the water). One string of 10 bass averaged 3 pounds apiece. Another string of 17 bass weighed 63 pounds for an average of 3.7 pounds. The largest bass weighed, tipped the scales at 9 pounds 5 ounces and measured 2 feet in total length.

Not even telegraph service could have spread the word as fast as the news got around. The west side boat landing soon resembled a trailer camp and parking space became non-existent. There has been as many visitors from other western Nevada communities as local fishermen.

Practically all of the fishing has been confined to the deep lakes and channels on the west side of the marsh. A few bass have been taken from Stillwater Point Reservoir, but, on the whole, fishermen have been reluctant to try other waters.

It has been said, with considerable truth, that boats equipped with horn and brakes are now needed to cruise the narrow channels between Long Lake, Willow Lake and Lead Lake. The traffic problem is acute.

Why go to Florida for bass fishing?

Fishermen, who aren't so fortunate as to have boats, have carried on the usual bank fishing in the Indian Lakes, with little success.

The Grasteit Co. carried on commercial fishing operations during the period. Information on this is included in the tables which follow on the next page. The fish taken from refuge waters were removed by seining, those taken from the Public Hunting Area by trapping. The large number of Sacramento perch caught poses a challenge to local fishermen who have yet to find a way to catch these fish in local waters.

On March 29, the County Game Management Board released 16 bluegill and 24 large-mouth black bass in Upper Lake of the Indian Lakes group. These fish were seined from a pond near Soda Lake.

F. Violations

None

VII OTHER ITEMS

A. Items of Interest

During the month of January our two automotive mechanics, William H. Ogden and Manuel Olano, became fathers. Mr. Ogden's tax exemption was a girl, Olano's a boy.

Arthur V. Huff's appointment was changed from Automotive Mechanic (General) to Supervising Automotive Mechanic during the period.

Indefinite Appointments as Automotive Mechanic (General), CPC-7, were received during the period by Manuel Olano and William H. Ogden. These men have been employed at this station as mechanics for some time, Ogden entered on duty April 23, 1951, Olano, June 5, 1951.

Earl W. Nygren, Maintenance Supervisor, made a trip to Northville, Michigan, to take delivery of our new Dodge dump truck during the first part of April.

At the end of the period the State construction crew, Pittman-Robertson employees on the cooperative development program, consisted of the following:

1 - Motor Patrol Operator	1 - El. Grader Operator
2 - Dragline Operators	2 - Tractor Operators
1 - Concrete Mixer Operator	1 - Concrete Crew Foreman
1 - Warehouseman	1 - Irrigator
2 - Oilers	1 - Truck Driver

Fig. III Game Fish Caught and Released in Carp Seining Operations
in Stillwater Point Reservoir

Date	Sacramento			
	Bass	Perch	Chub	Bullhead
3/9		9		
3/13		16		
3/16	1	31	1	6
3/17		36	2	1
3/19	1	2		1
3/20	2	42		3
3/21	1	21		2
3/22	3	19		1
3/24	2	18		1
3/25		24		4
3/26	1	21		1
4/20		23		
Total	11	262	3	20

Fig. IV Record of Carp Removal

Date	State Shooting Area (Trapped)	Refuge (Seined)
3/9		1,000 lbs.
3/13		5,000
3/16		3,000
3/17		600
3/19		2,500
3/20		3,000
3/21		500
3/22		1,500
3/24		700
3/25		1,000
3/26		300
4/20		400
4/21	200 lbs.	
4/22	400	
Total	600 lbs.	19,500 lbs.

ANAHO ISLAND NATIONAL WILDLIFE REFUGE

ANAHO ISLAND

No trips were made to Anaho Island during the period.

However, it might be well to point out that Pyramid Lake will be receiving a flow several times normal. The inflow can be expected to be greater than evaporation, all of which will prolong the period before Anaho Island becomes a part of the mainland.

The moisture content of the snow pack in the Truck Drainage is twice normal at high elevations and 3 to 4 times normal at low elevations. Practically all of this water will go into the Lake rather than being diverted for irrigation, which is usually the case.

FALLON NATIONAL WILDLIFE REFUGE

FALLON NATIONAL WILDLIFE REFUGE

The Fallon Refuge was entirely inundated during the period from water being dumped down the Carson River to prevent Lahontan Reservoir from overflowing. Waterfowl use was only slight, however, as this area previously has not received sufficient water to grow much in the way of food plants.

WINNEMUCCA NATIONAL WILDLIFE REFUGE

WINNEMUCCA LAKE REFUGE

Winnemucca Lake was visited on the dates of January 4 and March 23. On the January trip we found approximately 5,000 acres covered by water near the north end of the lake bed. By March 23, the area of water had increased in size by perhaps 25%. This water body is little more than a surface film and appears to be the product of runoff from the adjacent hills and a high water table. Gullies extending from the hills to the lake show evidence of considerable runoff, while roads near the lake shore are badly cut in places and covered with mud in others. Seeps are common along the lake shore.

Our observations in the summer of 1951 indicate that the water supply is too temporary in nature to be of any value. No plants of any kind, except an occasional Russian thistle and sprig of saltgrass appear on the lake bed.

No waterfowl, shore birds or marsh birds were observed at, or near, the water body. In fact, we have never observed any wildlife use of the temporary water area of Winnemucca Lake.

Composition credit for this report is as follows:

LeRoy W. Giles - Sections, I; III; IV-C; VI-C, VI-E; Winnemucca Lake

David B. Marshall - Sections, II; V; VI-E; Anaho Island; Fallon Refuge

Ellis E. Cress - Sections, IV-A, IV-E; VI-B; VII

Photos:

"M" Photos - David B. Marshall

"N" Photos - Earl W. Nygren

The following NR forms are not applicable to the Area through this report period:

- NR 3 - Big Game
- NR 5 - Disease
- NR 6 - Fish
- NR 7 - Plantings
- NR 8 - Cultivated Crops
- NR 9 - Collections and Receipts
- NR 10 - Haying and Grazing
- NR 11 - Timber Removal

Submitted May 16, 1952

LeRoy W. Giles

LeRoy W. Giles
Refuge Manager

APPROVED:

(1) Species Common Name	(2) First Migrants Seen		(3) Peak Concentration		(4) Last Migrants Seen		(5) Young Produced		(6) Total
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
1. <u>Swans:</u> Whistling swan			450	1/8	3	5/1			500
2. <u>Geese:</u> Canada goose Cackling goose Brant White-fronted goose Snow goose Blue goose			1,900	1/8					2,500
			160	2/5	1	4/18			500
3. <u>Ducks:</u> Mallard Black Duck Gadwall Baldpate Pintail Green-winged teal Blue-winged teal Cinnamon teal Shoveller Wood duck Redhead Ring-necked duck Canvas-back Scaup Golden-eye Buffle-head Ruddy duck			7,300	2/6					11,300
			1,500	4/4					1,600
			950	3/21					1,000
			50,500	3/6					50,600
			15,000	3/20					15,300
			2,000	4/30					2,000
			14,800	4/3					16,500
			1,700	4/30					2,000
			700	3/6					700
			115	3/20					115
			21	3/21					40
			225	3/6					225
			4,000	4/17					4,000
			17,600	4/17					17,600
4. <u>Coot:</u> 3-1750 (June 1949)									Form NR-1

SUMMARIES

Total Production:

Geese _____

Ducks _____

Coots _____

Total waterfowl usage during period 126,480

Peak waterfowl numbers 87,304

Areas used by concentrations Stillwater Point Reservoir,
Saltgrass Areas, Marsh Ponds, Pelican Island

Principal nesting areas this season _____

Reported by David B. Marshall

INSTRUCTIONS

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- (2) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.
- (5) Young Produced: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)Refuge Stillwater N. W. AreaMonths of January to April 1945

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Eared Grebe	3	4/18	10	4/18						10
Western Grebe	6	3/20	200	4/17						300
Pied-billed Grebe			400	4/30						400
White Pelican	20	3/5	2000	4/30						4000
Double-crested Cormorant	1	3/20	100	4/3						200
Great Blue Heron			300	4/30						400
American Egret			25	4/3						50
Snowy Egret	30	4/3	200	4/30						400
Black-crowned Night Heron	1	2/7	600	4/30						1000
American Bittern			50	4/30						50
White-faced Glossy Ibis	1	4/17	100	4/30						500
Sora			200	4/30						200
II. <u>Shorebirds, Gulls and</u>										
<u>Terns:</u>										
Snowy Plover	1	4/3	10	4/30						10
Killdeer			200	4/30						300
Black-bellied Plover	1	4/7	1	4/7						1
Willet	4	4/18	4	4/18						4
Greater Yellow-legs	1	2/19	30	4/17						60
Unidentified Peeps	10	2/16	3000	4/18						4000
Dowitcher	10	2/21	200	3/20						500
Marbled Godwit	5	4/8	30	4/17						50
Avocet	7	3/6	3000	4/18						4000
Black-necked Stilt	2	4/3	100	4/30						200
Wilson's Phalarope	4	4/21	25	4/30						25
California Gull			150	4/30						150
Ring-billed Gull			200	3/20						200

(over)

(1)	(2)		(3)		(4)	(5)			(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove									
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow Prairie Falcon	1	3/27	1	4/3					5
			20	3/21					50
			15	4/8					20
	1	4/25	1	4/25					1
II. <u>Shorebirds, etc. Cont'd</u>									
Forster's Tern	2	4/21	50	4/30					50
Caspian Tern	1	4/3	50	4/30					50
					Reported by <u>David B. Marshall</u>				

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752

Form NR-2

(April 1946)

UPLAND GAME BIRDS

161

Refuge Stillwater W. M. AreaMonths of January to April, 1945

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant									10	Practically all intermittent use of the Area.
California Quail									50	Practically all intermittent use of the Area.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Stillwater U. M. Area

Year ending April 30, 1952

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5)	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Popula tion
								Permit Number	Trappers Share	Refuge share				
Muskrat	8,000 acres marsh vegetation	0.79		289				T-5352 T-5353 T-5354	30 1261 172	30 1260 172	1462			10,100
Coyote	130,000 desert and marsh border	8,666												15

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS:

Reported by LeRoy E. Giles

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Stillwater F. N. Area

Months of January thru April 19452

(1) VARIETY	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED USE		
				TRANS- FERRED	SEEDED	FED	TOTAL		SEED	FEED	SURP.
Barley	383	0	383					383	293	90	0
Rye	45	0	45		43		43	2	2		0
Oats	10	0	10		10		10	0			

- (8) Indicate shipping or collection points.....
- (9) Grain is stored at Headquarters yard, Stillwater Refuge.....
- (10) Remarks.....

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lbs., Corn (ear)—70 lbs., Wheat—60 lbs., Barley—50 lbs., Rye—55 lbs., Oats—30 lbs., Soy Beans—60 lbs., Millet—50 lbs., Cowpeas—60 lbs., and Mixed—50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately: Corn, wheat, proso millet, etc. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share-cropping, or harvest from food patches.
- (4) A total of Columns 2 and 3.
- (6) Column 4 less Column 5.
- (7) This is a proposed breakdown by varieties of grain listed in Column 6.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters grainary", etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.



M-278. Canada goose nest on top of muskrat house in Pool 3877.
4/24/52



M-279. Site of above Canada goose nest atop muskrat house in Pool 3877.
4/24/52



M-257. Muskrat houses in cattail on Foxtail Lake. Notice the openings created by the "rats". 2/29/52



M-260. Stack of cut cattails put up for Canada goose nest site. Experiment was unsuccessful. 3/4/52



M-258. Boat load of cattails cut for goose nesting stack. 3/4/52



M-259. Goose stack constructed of cattail on saltgrass island. 3/4/52



M-271. View in flooded sand dune area below Pintail Bay. Note the large amount of shoreline. 4/16/52



M-269. Typical pond in flooded sand dune area below Pintail Bay. Notice nesting island. 4/16/52



M-265. Slip scraper in position to take out load of hardstem bulrush for planting stock. Tops were cut. 3/27/52



M-263. Clump of hardstem bulrush on slip scraper just after it was pulled out of water by 22-Cat. 3/27/52



M-274. Marsh fire on Canvasback Gun Club. White smoke is saltgrass; dark smoke is from cattail. 4/22/52



M-275. Portion of Canvasback Club burn which spread into the Lead Lake area. Cattail, saltgrass and greasewood burnt here. 4/23/52



M-284. Management Area sign, courtesy Nevada State Highway Department.
Refuge Clerk serving as model. 4/28/52



Stillwater Marsh bass. A limit of 10
good-sized fish caught shortly after the
opening date of the season. Photo
courtesy, Nevada State Fish and Game Commission.



M-276. Burnt muskrat house near Lead Lake 36 hours after fire which spread from Canvasback Club. Repair with cattail already started. 4/23/52



M-268. Mrs. Peggy Wheat (right) and Indians, one of whom used to live in marsh under primitive conditions as small girl and supplied us with information on marsh history.



M-266. 2-1/2 yd. Lorain dragline excavating a section of the Lead Lake Canal. 4/1/52



M-267. View of 2-1/2 yd. Lorain digging Lead Lake Canal. Viewed from canal bottom. Depth of canal necessitates digging one side at a time. 4/1/52



M-283. Loading riprap with new loader which was designed and built in our shop by Huff and Olano. Loader is mounted on the R-5 Cat. 4/25/52



M-277. Lima dragline in tow to shop for overhaul. 4/23/52



B-70. Our new steam cleaner and its shelter.

2/7/52



B-71. Wash day - I-18439.

2/13/52



N-63. Collar forms in place on Outlet 45+15 in East Waterfowl Food Plot. 1/21/52



N-68. Looking north along upstream face of "D" Dike showing placement of rock riprap, 2/5/52